

Data Elements for Reporting Water Quality Results of Chemical and Microbiological Analytes

AGENCY: U.S. Geological Survey

ACTION: Notice of availability and request for comments.

SUMMARY: Notice of availability is hereby given for a 45-day public comment period on the proposed set of Data Elements for Reporting Water Quality Results of Chemical and Microbiological Analytes developed by the National Water Quality Monitoring Council. The Council prepared this critical core set of data elements to facilitate the sharing of chemical and microbiological water quality data and promote efficiency in the monitoring of water resource quality programs. The Council will hold public meetings to take public comment on this proposal at four locations. The suggested audiences for this proposal include program managers responsible for developing and using water quality data, researchers, data analysts, and database managers in the public and private sectors and the general public with interests in development and use of water quality data.

SUPPLEMENTARY INFORMATION:

I. Background

Water quality monitoring is an increasingly important element of water quality management activities. It provides information for an accurate understanding of the conditions of waters and the trends in their observed quality. Water quality must be understood in order that valid and effective restoration and protection programs can be designed for waterbodies that vary significantly in their vulnerability and pollution stress. Because of the cost of its collection, water quality data must be viewed as a resource worthy of careful management both to preserve it for future analyses by the agency that collects it and to share it between local, state and federal agencies and the private sector involved in resource management activities.

The National Water Quality Monitoring Council has identified the standardization of water quality data elements as important in the preservation and use of data and is proposing today a list of data elements that offer both definitions of each element and lists of related groups of elements needed to provide a complete picture of the sampling and analytic activity. In 1995, the predecessor organization to the Council, the Intergovernmental Task Force on Monitoring Water Quality (ITFM), identified the need for a set of minimum data elements to facilitate the sharing and exchange of information (ITFM, 1995a). The ITFM also developed a recommended list of data elements for use in establishing new, or modernizing existing, databases which served as the starting point for today's proposal (ITFM, 1995b). This list is expected to influence the collection of water quality data by federal, state and local agencies, academic institutions, the private sector and citizens who volunteer their efforts. These are the groups that together, collect the majority of ambient water quality data in the country.

The core set of Data Elements for Reporting Water Quality Results of Chemical and Microbiological Analytes is expected to be presented to the Advisory Committee in Water Information at its May 2001 meeting and to be available to the U.S. Environmental Protection Agency for consideration as one of the growing list of data standards it is adopting, as well as for voluntary use by other local, state and federal agencies and the private sector.

In the future, the National Water Quality Monitoring Council is planning to develop data elements to address higher level biological indicators of water and habitat quality for ecological analysis. The Council has concurrent efforts to foster more consistent analytic techniques and more widespread information sharing as a means of reducing costs and increasing the data available for decisions.

II. Proposal

There is a minimum amount of information that is needed to enable data to be used by anyone but the party collecting it. How little data can be collected and still preserve the utility of the sampling effort to others varies with the kind of data, and how familiar others are with it. Beyond this minimum, there are other things that need to be known to preserve its value to a wide audience, and over time. It is the Council's belief that the need to preserve data for future uses is growing and that more data describing the data (metadata) should be collected and stored to support that goal. The Council believes that by proposing a set of data elements, agencies collecting water quality data will be spared the task of inventing the organization of metadata for themselves. The standardization inherent in the use of a standard data element list holds the prospect of reducing costly duplicate monitoring efforts.

The core set of Data Elements for Reporting Water Quality Results of Chemical and Microbiological Analytes cover wells,

surface water stations, and precipitation. This list is intended to standardize the preservation of data and to facilitate its sharing by standardizing definitions and by defining the list of data, metadata and their definitions needed to adequately describe it. A data element is the name of a set of information with the same attribute. A data element may be a data field in a database such as a laboratory name, an analyte, or the latitude of the sampling station. Examples of metadata elements include such things as sampling and laboratory procedures, quality controls, and locational measurement accuracy.

The list of data elements is not specific to any particular database, but is intended to be used voluntarily by agencies, organizations and individuals to guide their reporting, storage, and sharing of water quality data. This list is intended primarily to guide the collection of ambient water quality data, but many of the allowable sample location and sample type descriptions are versatile enough to be useful in collecting these data in other settings.

The list of data and metadata elements is divided into categories that describe who collected and analyzed the sample, what was analyzed, why the sampling was undertaken, when the sample was collected and analyzed, where the sampling occurred, and how the analysis was done. The list is intended to describe the breadth of information needed to ensure the continuing utility of the information both within an organization and between organizations as information is stored and shared, but without being an exhaustive list of every possible data element that could be reported. The Council devoted great efforts to focus the core set of data elements on the essential data needed across programs, recognizing that if more extensive data from a particular monitoring program were collected, it could be made available as well.

These data elements are proposed as guidelines to define a measure of good practice within the water quality monitoring community in order to encourage greater data consistency and allow the quality of data to be determined by future users. The Council's advocacy of these data elements is not intended to discourage the use of existing water-quality data solely because it does not meet these guidelines.

III. Authority

The Office of Management and Budget memorandum M-92-01, Coordination of Water Resources Information (OMB, 1991), established the Water Information Coordination Program (WICP) to ensure coordination of water information programs.

The Department of the Interior, through the U.S. Geological Survey, was designated as the lead agency for the WICP. The Memorandum M-92-01 directed all other Federal organizations funding, collecting, or using water resources information to assist the U.S. Geological Survey in ensuring the implementation of an effective WICP. The WICP was specifically charged with developing uniform standards, guidelines, and procedures for the collection, analysis, management, and dissemination of water information in order to improve quality, consistency, and accessibility nationwide.

The WICP created the Advisory Committee on Water Information (ACWI) under the provisions of the Federal Advisory Committee Act (FACA). FACA provides the procedures for an advisory committee to be established in the interest of obtaining advice or recommendations for the President or one or more agencies or officers of the Federal Government. ACWI created the National Water Quality Monitoring Council to make recommendations on how to coordinate and provide guidance and technical support for the voluntary implementation of the recommendations presented in the Strategy for Improving Water Quality Monitoring in the United States (ITFM, 1995b) by government agencies and the private sector.

The intent of the Strategy is to stimulate the monitoring improvements needed to achieve comparable and scientifically defensible information on interpretations, and evaluations of water quality in fresh surface water, estuaries and near coastal water, ground water, and precipitation at local, watershed units, regional, and national levels. The information is required to support decision making at local, state, tribal, interstate, and national scales.

During the assembly of the list of data elements, the work groups assembled by the Council attempted to reduce the number of recommended data elements in order to minimize the burden of recording the information each element requires. The Council believes the current list is the core set of elements that are reasonable to collect and record in order to allow people, in addition to those initially collecting the data, to use the data with confidence. This position is predicated on the Council's belief that water quality data is an investment with value over time in a single organization and between organizations and that the investment must be adequately protected with metadata describing the data such as the Council proposes today. This represents a departure from current practice for many water quality monitoring programs, and the Council would like to learn of different and/or opposing views on this issue.

One specific issue within the wider issue of metadata is the recording of information about quality control samples, and whether the set of data elements affords adequate reference to them.

As with any list of data elements, the selection of the specific names to be used and their definitions are important. The Council welcomes any specific comments or expressions of preferences in this regard.

IV. Consultation

The Core Set of Data Elements for Reporting Water Quality Results was developed through a collaborative effort with representatives from the following local, State, and Federal agencies and the water industry, which are members of the Council:

- East Bay Municipal Utility District (California)
- Hampton Roads Sanitation District (Virginia)
- Orange County Water District (California)
- Merck, Inc.
- National Water Research Institute
- George Washington University
- Association of Public Health Laboratories
- Delaware River Basin Commission
- Florida Department of Environmental Protection
- Virginia Department of Environmental Quality
- New Jersey State Geological Survey
- New York Department of Health
- Washington State Department of Ecology
- Arizona Department of Environmental Quality
- National Institute of Standards and Technology
- US Geological Survey
- US Environmental Protection Agency

The Council also held a National Water Quality Monitoring Conference in Austin, Texas, in April 2000, at which it sponsored a workshop attended by a wide range of representatives from local, state and federal agencies and the private sector concerning the content, focus, need and future use of a core set of water quality data elements. The workshop participants overwhelmingly supported this effort.

V. Public Meetings

Public hearings will be held to take public comment on the core set of Data Elements for Reporting Water Quality Results at the following locations, dates and times:

Chicago, IL - March 23, 2001 from 10:00 a.m until 3:00 p.m., in the Morrison Room at the General Services Administration Conference Center, 3rd Floor, Room 331, Metcalf Building, 77 West Jackson Boulevard, Chicago, IL.

San Francisco Bay Area, CA - March 27, 2001, from 10:00 am until 3:00 p.m., in Room 3240A at the U.S. Geological Survey offices at 345 Middlefield Road, Menlo Park, CA.

Denver, CO - March 28, 2001, from 9:00 am until 12:30 p.m. in the Sabine-Cleere Room, first floor of Building A, of the Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive, South, Denver, CO.

Washington, DC - April 5, 2001, from 10:00 am until 3:00 p.m. in the South Interior Building Auditorium, of the U.S. Department of the Interior, 1849 C Street, NW, Washington, DC.

The suggested audiences for this proposal include program managers responsible for developing and using water quality data, researchers, data analysts, and database managers in the public and private sectors, and the general public with interests in development and use of water quality data.

VI. Electronic Access and Filing of Comments

You may view and download the draft recommendations for the core set of Data Elements for Reporting Water Quality Results on the USGS Water Information Coordination Program's Internet site at:
<http://wi.water.usgs.gov/pmethods/elements/elements.html> If you require a paper copy to be sent to you, you must contact the EPA Safe Drinking Water Hotline at (800) 428-4791 and request that it be sent to you. You may submit comments by electronic mail (e-mail) to ow-docket@epa.gov. Submit comments as an ASCII or WordPerfect file avoiding the use of special characters

and any form of encryption. Comments may also be mailed to: Water Docket, Docket No. W-01-02, MC 4101, U.S. EPA, 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460. Comments being hand-delivered should be addressed to: Water Docket, Docket No. W-01-02, MC 4101, Room BE 57, U.S. EPA, 401 M Street, SW, Washington, D.C. 20460. Identify all comments and data in electronic or written form by Docket Number W-01-02. Electronic and written comments must be received by the docket by April 30, 2001, for consideration in formulating a final core set of Data Elements for Reporting Water Quality Results.

Documents relevant to this proposal are available for inspection from 9:00 a.m. to 4:00 p.m. Eastern Time, Monday through Friday, excluding legal holidays at the Water Docket, East Tower, Room EB 57, U.S. EPA, 401 M Street, SW, Washington, D.C. For access to docket (Docket No. W-01-02) materials, please call (202) 260-3027 between 9:00 a.m. and 3:30 p.m. Eastern Time, Monday through Friday to schedule an appointment. A reasonable fee may be charged for copying.

VII. For Further Information

For additional information concerning today's proposal, you may contact: Charles Job, Drinking Water Protection Division, Office of Ground Water and Drinking Water (MC-4606), U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington D.C. 20460, or Charles Peters, U.S. Geological Survey, 8505 Research Way, Middleton, WI 53562.

VIII. References

Office of Management and Budget. 1991. Coordination of Water Resources Information. Memorandum M-92-01 (dated December 10, 1991).

Intergovernmental Task Force on Monitoring Water Quality. 1995a. Strategy for Improving Water-Quality Monitoring in the United States, Final Report of the Intergovernmental Task Force on Monitoring Water Quality.

Intergovernmental Task Force on Monitoring Water Quality. 1995b. Strategy for Improving Water-Quality Monitoring in the United States, Final Report of the Intergovernmental Task Force on Monitoring Water Quality; Technical Appendices.